

REMARKS

Reconsideration of this application in light of the foregoing amendment and these remarks is requested.

Record of Interview

The Examiner's summary of the telephonic interview held with the undersigned is accurate and correct. A restriction was imposed and the election recited was made. Non-elected claims are now cancelled. The I.D.S. which was promised has been sent to the Examiner on March 13, 2003.

Matters of Form and Scope

The Office Action asks that materials incorporated by reference be added to the disclosure. The information in question is referenced at Paragraph 6 on pages 2/3 of the specification. This referenced information only provides background on prior uses of sodium bentonite for filling drill holes. It was not provided as material essential to the description of the invention. The two incorporated items were included in the Information Disclosure Statement and thus should be present in the file. Under these circumstances it seems inappropriate to amend the specification. One desiring to see the incorporated background information can locate it in the literature or in the USPTO file of this application.

If the Examiner believes that it would be appropriate, we could remove the sentence bridging lines 1 and 2 on page 3. Please telephone if this is considered necessary.

35 USC 112 Rejection

The Examiner is correct. We did make dependency errors in claims 28 and 30. These have been corrected in the amended claims now submitted.

Restriction/Election

The election of claims 22-33 is confirmed. Non-elected claims 1-21 have been cancelled and placed in a divisional application. This has been done explicitly in response to the restriction requirement.

Rejections over the Art

Claims 22-33 are under examination. Claims 31 and 33 are deemed patentable but are objected to because they depend from a rejected claim. Likewise, claim 30 was rejected only because of the improper dependency noted above and now corrected.

Claims 22-25 are rejected under 35 USC 102(b) or 103 over Armentrout USP 2,836,555. This rejection is respectfully traversed.

As recited in Claim 22, this invention involves plugging a well with bentonite nodules. The bentonite nodules are defined by their density, crush strength and durability as determined by a survivability test and by their water content which provides these properties. The specification at page 12 describes how nodules formed from bentonite that contains 6-7% connate water and up to about 20% nonconnate water can be suitably compacted to meet the specifications set forth in the claims. Typical compaction of this type of bentonite takes place at 250-700 psi (see paragraph 0098). The disclosure shows, however, that balancing the water content with processing conditions provides the desired strong nodules which are useful for plugging wells.

The '555 patent does not appear to directly relate to plugging wells. It seems to focus on cementing porous strata during well drilling. In its first few paragraphs, the '555 patent describes the use of pellets of compressed, dried or dehydrated bentonite to effect this cementing but then goes on to focus on its invention which concerns the use of water-insoluble polymer coatings on bentonite pellets. These coatings, such as cellulose acetate,

urea-formaldehyde, polystyrene and nitrocellulose prevent egress of water to the bentonite clay. In some cases a small "entrance" hole is provided to allow water to be forced in to the pellet under pressure to be absorbed by the bentonite clay.

The complexity of the polymer-coated, hole-containing pellets and their use in the cementing system proposed by the '555 patent may be a function of its specified application of cementing during drilling but this is, of course, speculative. What is known is that in the presently claimed application of plugging completed wells, this complexity can be avoided if the bentonite is suitably compacted and has a suitable water content to give the specified strength and durability as recited in claim 22. If anything, the '555 patent, with its requirement of coatings and holes, teaches away from the simple solution taught in the present claim 22.

Claim 23 describes the idea of dropping the bentonite particles to the bottom of the well. This is not shown in the '555 patent which instead describes adding the pellets to cement strata during drilling and thus to depositing them into the side walls of the drill hole during drilling rather than to the bottom of the well after the well has been finally completed.

Similarly, claim 24 calls for adding the pellets over the length of the well. The '555 patent seems to focus on cementing individual strata while maintaining an open drill hole. The Office Action states that the idea of filling the entire length of the drill hole with bentonite is shown by the '555 reference. The undersigned can't find this but may just be missing something. Help please?

Claim 25 further delimits claim 22 by reciting that plugging can be effected by adding layers of the above-described bentonite nodules and layers of nonbentonite materials. The '555 patent, which does not deal with plugging, per se, does not teach

plugging with these two types of layers. The passage on column 5 noted in the Office Action seems to teach adding pellets to cementing mixtures and not to separate discrete layers of bentonite and nonbentonite materials as set forth in claim 25. Accordingly, it is submitted that claims 22-25 are patentable over the '555 reference.

Claims 29 and 32 depend from claim 22 and are rejected over the '555 patent under 35 USC 103(a). This rejection is traversed.

Claim 29 introduces the idea of carrying out the plugging process of claim 22 in the presence of saline water. The Office Action notes that the '555 reference does not teach that idea but still holds that the reference would render it obvious. With the reference's teachings that water insoluble layers and holes are to be used with bentonite pellets when cementing wells, which features are not needed with the present process for plugging wells in the presence of saline water, it is not seen that the reference would render obvious this aspect of the invention.

Claim 32 specifies a nodule size of 1-6 inches. This size is described as providing a suitable surface-to-volume ratio to prevent premature hydration and swelling of the nodules until they have fallen to the bottom of the well. The reference teaches that when its coated pellets are used to cement wells, they can be 1/2 inch in diameter (see column 5). This size pellet of the art would have from about 1/8 to about to about 1/1828 the volume of the range of nodule sizes recited in claim 32.

This extreme difference is not suggested by the '555 reference. Thus, the '555 patent should not render either claim 29 or 32 obvious.

Finally, claims 26-28, which introduce to claim 22 the idea of adding heat to the well being plugged prior to or during the addition of the bentonite nodules, have been rejected under 35 USC 103(a). This rejection is respectfully traversed.

The Office Action rejects these claims over the '555 patent plus Fraser, USP No. 47,410. Fraser is directed to adding boiling water to an oil well to melt away paraffin wax which has blocked flow out of the well. It must be pointed out that claims 26-28 add heat in the context of well plugging with bentonite solid nodules and thus this teaching of adding heat to unplug a blocked well teaches directly away from claims 26-28.

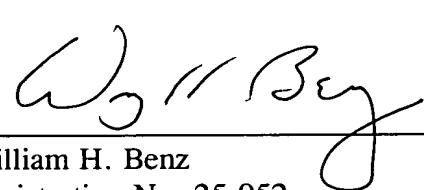
Accordingly, it is submitted that all the nonelected claims have been moved to a divisional application; the issue raised with regard to the incorporation by reference has been dealt with or if necessary can be further dealt with a simple deletion; the 35 USC 112 informality has been corrected; and all the pending claims have been shown to be patentable over the cited art. Accordingly, this case should be passed to allowance. Such action is requested.

Respectfully submitted,

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